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ABBREVIATIONS AND SYMBOLS

M.M. . . Mineralogical Magazine

: M.A. . . Mineralogical Abstracts

: A.M. . . American Mineralogist

CHEMICAL & PHYSICAL CHEMICAL

atomic absorption spectroscopy	.. AAS
cation-exchange capacity	.. c.e.c.
chemical analysis	.. chem. anal.
concentrated	.. conc.
differential thermal analysis	.. DTA
dilute	.. dil.
disintegrations per minute	.. d.p.m.
equivalent U ₃ O ₈	.. eU ₃ O ₈
ethylenediaminetetra-acetic acid	.. EDTA
heat of formation (absolute temperature subscript)	.. ΔH _t
hydrogen ion conc. acidity	.. pH
insoluble residue	.. insol. res.
isotopes, e.g.	.. ⁴⁰ Ar, ⁴⁰ K
loss on ignition	.. ign. loss
milliequivalent	.. me.
microgramme	.. μg
million-years	.. m.y.
neutron activation analysis	.. NAA
not determined	.. n.d.
not found	.. nt. fd.
not present	.. nil
parts per million	.. p.p.m.
rare earths	.. TR or RE
standard mean ocean water	.. SMOW
strength of solution, normal	.. N
— — molar	.. M
substances in ionic state	
anions, e.g.	.. Cl ⁻ , SO ₄ ²⁻
cations, e.g.	.. K ⁺ , Fe ³⁺
thermogravimetric analysis	.. TGA
trace	.. tr.
X-ray fluorescence analysis	.. XRF

CRYSTALLOGRAPHIC & STRUCTURAL

Angstrom unit (10 ⁻⁸ cm)	.. Å
crystal axes	.. a, b, c
— face indices	.. (hkl)
— form indices	.. {hkl}
— zone indices	.. [hkl]
indices of X-ray diffractions	.. hkl
intensity	.. I
— relative	.. I/I ₀
interplanar spacing	.. d
mica structural polymorphs	.. 1M ₁ , 2M ₁
Siegbahn units	.. kX
space group. These words are written in full	
unit cell, formula units	.. Z
— — repeat distances	.. a, b, c
— — reciprocal lattice lengths of edges	.. a*, b*, c*
— — interaxial angles direct lattice	.. α, β, γ
— — — reciprocal lattice	.. α*, β*, γ*

OPTICAL

dispersion, e.g.	.. .. ..	.. r > v
electron microscopy	.. .. ..	.. EM
extinction angle, e.g.	.. .. ..	.. γ : c
infrared	.. .. ..	.. IR
optic axial angle	.. .. ..	.. 2V
— — plane	.. .. ..	.. O.A.P.
refractive index, in text	.. .. ..	.. refr. ind.
— — of isotropic mineral	.. .. ..	.. n
refractive indices		
of uniaxial mineral	.. .. ..	.. ω, ε
of biaxial mineral	.. .. ..	.. α, β, γ
scanning electron microscopy	.. .. ..	.. SEM
sign of biaxiality		
negative	.. .. ..	.. 2V _α or —
positive	.. .. ..	.. 2V _γ or +
ultraviolet	.. .. ..	.. UV

PHYSICAL

calculated	.. .. ..	.. calc.
calorie	.. .. ..	.. cal.
calorie, large	.. .. ..	.. kcal.
cycles per second	.. .. ..	.. c/s
degree centigrade	.. .. ..	.. °C
density	.. .. ..	.. D (quote units)
—, relative, e.g.	.. .. ..	.. D ₄ ²⁰
electron paramagnetic resonance	.. .. ..	.. e.p.r.
gramme	.. .. ..	.. g
hardness	.. .. ..	.. H.
melting-point	.. .. ..	.. m.p.
micron (10 ⁻⁴ cm)	.. .. ..	.. μ
millimicron (10 ⁻⁷ cm)	.. .. ..	.. μμ
nanometre (10 ⁻⁷ cm)	.. .. ..	.. nm
natural remanent magnetization	.. .. ..	.. n.r.m.
pounds per square inch	.. .. ..	.. lb/in. ²
pressure	.. .. ..	.. P
soluble	.. .. ..	.. sol.
specific gravity, terms of reference not known	.. .. ..	.. sp. gr.
temperature	.. .. ..	.. T
Vickers hardness number	.. .. ..	.. VHN
wavelength	.. .. ..	.. λ

SYMBOLS

approximately equal to	.. .. ..	.. ~
equal to	.. .. ..	.. =
equal to or greater than	.. .. ..	.. ≥
equal to or less than	.. .. ..	.. ≤
greater than	.. .. ..	.. >
less than	.. .. ..	.. <
not equal to	.. .. ..	.. ≠
parallel to	.. .. ..	.. ||
per cent.	.. .. ..	.. %
per mille	.. .. ..	.. ‰
perpendicular to	.. .. ..	.. ⊥
proportional to	.. .. ..	.. ∝

ABBREVIATIONS USED IN REFERENCE TO PUBLICATIONS

Abhdl.	Abhandlungen	Gesell.	Gesellschaft	Prosp.	Prospecting
Abstr.	Abstract, -s	Govt.	Government	Publ.	Publication(s), published
Abt.	Abteilung	Hdbh.	Handbuch	Razv.	Razvedka = survey
Acad., Accad., Academy, & equiv.		Illustr.	Illustrat-ed, -ions	Rec.	Records
Akad.		Imp.	Imperial	Ref.	References, referata
Adv.	Advancement	Industr.	Industr-ial, -y	Rend.	Rendiconti
Agric.	Agricultur-al, -e	Inform.	Information	Repb.	Republic
Anal.	Analy-st, -tical, &c.	Inst.	Institute, institution, & equiv.	Rept.	Report(s)
Ann., An.	Annals, Anales, & equiv.	Instr.	Instruments	Res.	Research
Anorg.	Anorganisch	Int.	Interior	Reserv.	Reserves
Appl.	Applied	Intern.	International	Resrcs.	Resources
Arch.	Archives	Invest.	Investigations	Rdsch.	Rundschau
Asoc., Assoc.	Association, & equiv.	Issl.	Issledovaniye = investigation	Rev.	Review
Astron.	Astronomical	Ist.	Istituto	Roy.	Royal, & equiv.
Bd.	Band	Izd.	Izdanie = publication	Sborn.	Sbornik = magazine
Beitr.	Beiträge	Izvest.	Izvestiya	Sch.	School, Schule
Ber.	Bericht-e	Jahrb.	Jahrbuch	Sci.	Science
Berg.	Bergwesen	Jahresb.	Jahresbericht	Sect.	Section
Bol., Boll., Bull.	Bulletin, & equiv.	Jorn., Journ.	Journal, & equiv.	Sedim.	Sedimentary
Bur.	Bureau	Khim.	Khim-ie, &c.	Ser., sér.	Series, & equiv.
Ceram.	Ceramic, & equiv.	Kl.	Klasse	Serv.	Service
Chem., Chim.	Chemi-cal, -stry, & equiv.	Krist.	Kristallographie, &c.	Sitzb.	Sitzungsbericht
Cien.	Ciencia, -s	Lab.	Laboratory	Skr.	Skrift, -en -er
Circ.	Circular	Lit.	Literary	Soc.	Society, & equiv.
Cl.	Classe	Mag.	Magazine	Sondbd.	Sonderband
Com.	Comisión	Mat., Math.	Mathematical, & equiv.	Spec., spez.	Special, & equiv.
Comm.	Commission	Medd.	Meddelelser	Stand.	Standard(s)
Conf.	Conference, & equiv.	Mem., Mém.	Memoir, -s, & equiv.	Stn.	Station
Congr.	Congress, & equiv.	Metall.	Metallurg-ical, -y	Suppl.	Supplement
Contr.	Contributions	Min.	Mineralog-ical, -ist, -y	Surv.	Survey, -or
C.R.	Comptes Rendus	Misc.	Miscellaneous	Symp.	Symposium
Crist., Cryst.	Crystallograph-ical, -y & equiv.	Mitt.	Mitteilungen	Tab(s).	Table(s), tabellen
Dept.	Department, & equiv.	Mh.	Monatsheft	Techn.	Technologi-cal, -y
Diss.	Dissertation	Mus., Muz.	Museum, & equiv.	Tids(s).kr.	Tid(s)krift, -en
Divn.	Division	Nac., Nat., Naz.	National, & equiv.	Tijdschr.	Tijdschrift
Dokl.	Doklady = C.R.	Natur.	Natur-al, -alist, & equiv.	Trab.	Trabajos
Econ.	Economic	Natur-w., -v.	Naturwissenschaft, & equiv.	Trans.	Transactions
Educ.	Education	Obraz.	Obrazovanie = education	Transl.	Translat-ed, -ion
Eng.	Engineering	Obshch.	Obshchestva = society	U.A.R.	United Arab Republic
Exped.	Expedition	Petr.	Petrolog-ical, -y, & equiv.	Uch.	Uchennye = learned
Exper.	Experimental	Petrol.	Petroleum	Ucheb.	Uchebnyi = teaching
Expl.	Exploration	Phil.	Philosophical, &c.	Unders.	Undersögelse, undersökni
Fac.	Faculty	Photos.	Photographs	Univ.	University, & equiv.
Fig(s).	Figure(s)	Photomicros.	Photomicrographs	Verhdl.	Verhandlungen
Fis.	Fisicale, fisico	Phys.	Physic-al, -s, & equiv.	Vidensk.	Videnskaps
Fören.	Föreringen	Pl(s).	Plate(s)	Volc., Vulk.	Volcanolog-ical, -y &c.
Förh.	Förhandlingar	Polytech.	Polytechnic, & equiv.	Vses.	Vsesoyuznyi = All-Union
Fortsch.	Fortschritt, -e	Pract., Prakt.	Practical, & equiv.	Vyssh.	Vysshikh = higher
Gen.	General	Proc.	Proceedings	Wiss.	Wissenschaft
Geo-chem., chim.	Geochemi-cal -stry, &c.	Prof.	Professional	Zap.	Zapiski = memoirs
Geogr.	Geograph-y, ical, &c.			Zav.	Zavodskaya = factory
Geol., géol.	Geology, -ical, -ist, & equiv.			Zaved.	Zavedenii = institution
Geophys., geofis.	Geophysic-al, -s, &c.			Zeits.	Zeitschrift
				Zhurn.	Zhurnal = journal
				Ztg.	Zeitung

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